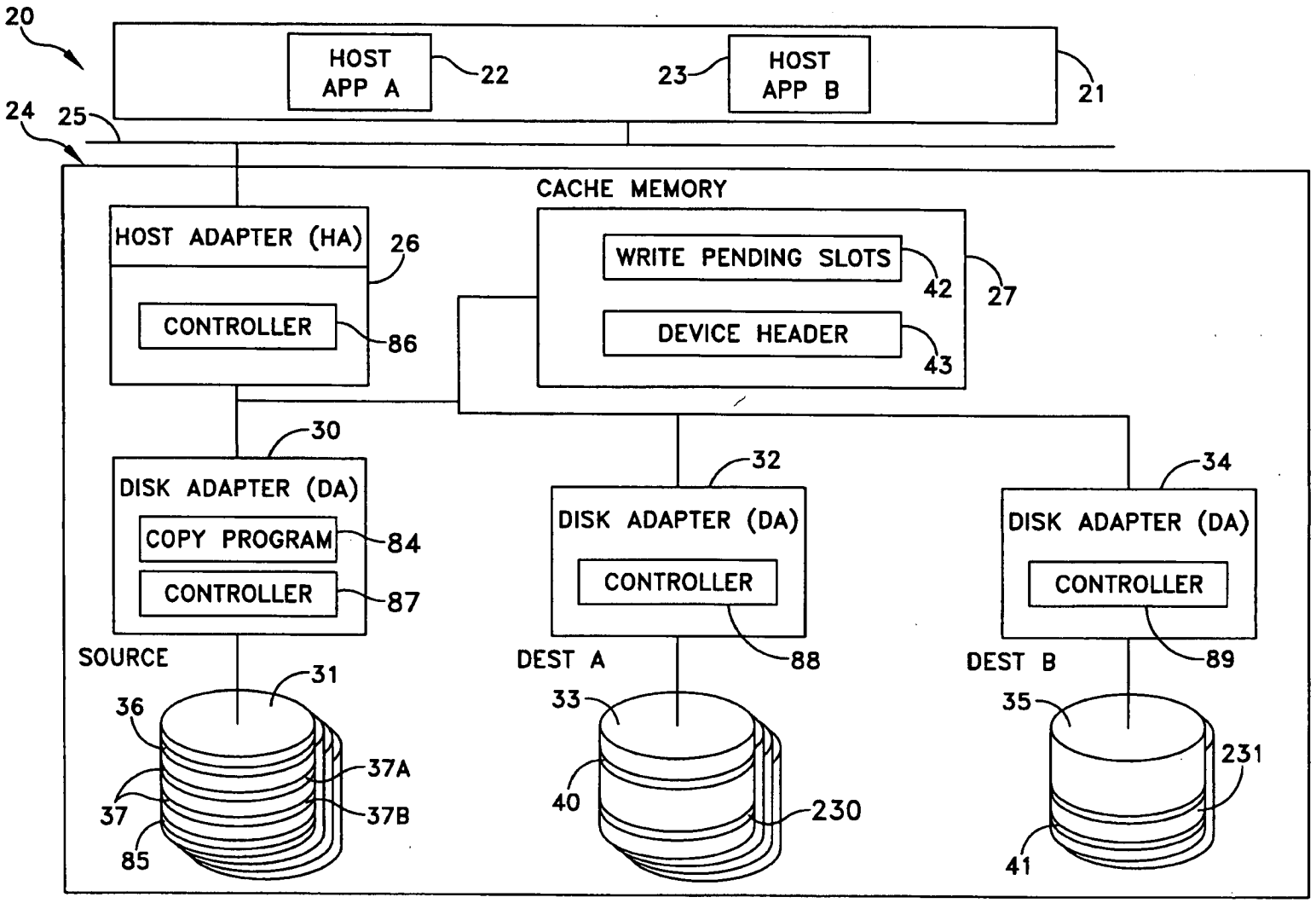
20
HOST APP A
22
23
HOST APP B
21
24
25
CACHE MEMORY
HOST ADAPTER (HA)
26
CONTROLLER
86
WRITE PENDING SLOTS
42
27
DEVICE HEADER
43
30
DISK ADAPTER (DA)
COPY PROGRAM
84
CONTROLLER
87
32
DISK ADAPTER (DA)
CONTROLLER
88
34
DISK ADAPTER (DA)
CONTROLLER
89
SOURCE
DEST A
DEST B
31
36
37A
37
37B
85
33
40
230
35
231
41

FIG. 1

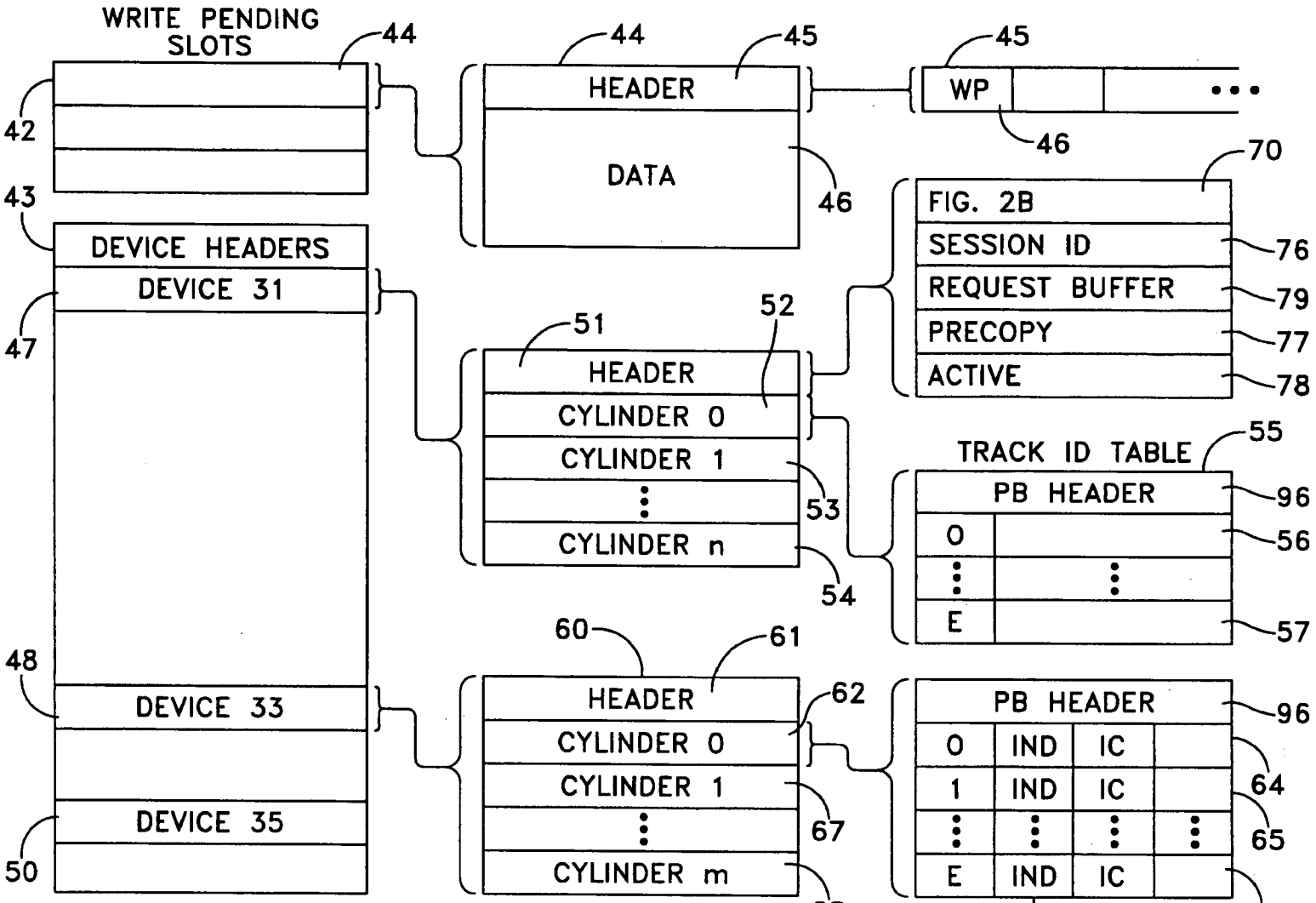
WRITE PENDING SLOTS
44
42
43
DEVICE HEADERS
DEVICE 31
47
48
DEVICE 33
DEVICE 35
50
44
45
HEADER
DATA
46
45
WP
46
70
FIG. 2B
SESSION ID
76
REQUEST BUFFER
79
PRECOPY
77
ACTIVE
78
51
52
HEADER
CYLINDER 0
CYLINDER 1
53
CYLINDER n
54
TRACK ID TABLE
55
PB HEADER
96
0
56
E
57
60
61
HEADER
62
CYLINDER 0
CYLINDER 1
67
CYLINDER m
68
PB HEADER
96
0
IND
IC
64
1
IND
IC
65
E
IND
IC
66
132

FIG. 2A

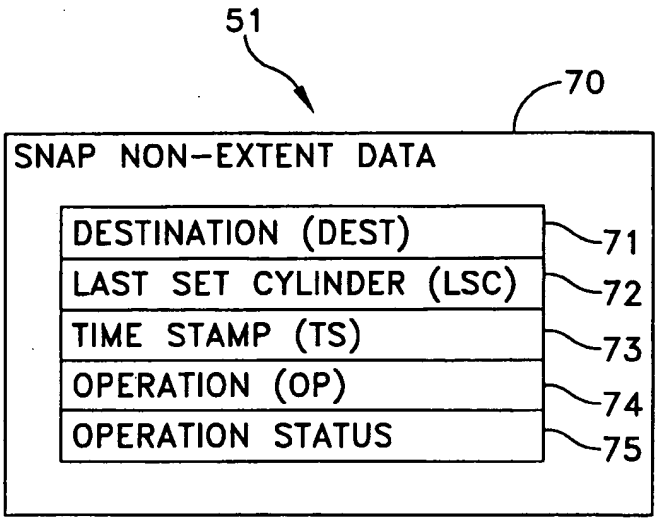
51
70
SNAP NON-EXTENT DATA
DESTINATION (DEST)
LAST SET CYLINDER (LSC)
TIME STAMP (TS)
OPERATION (OP)
OPERATION STATUS
71
72
73
74
75

FIG. 2B

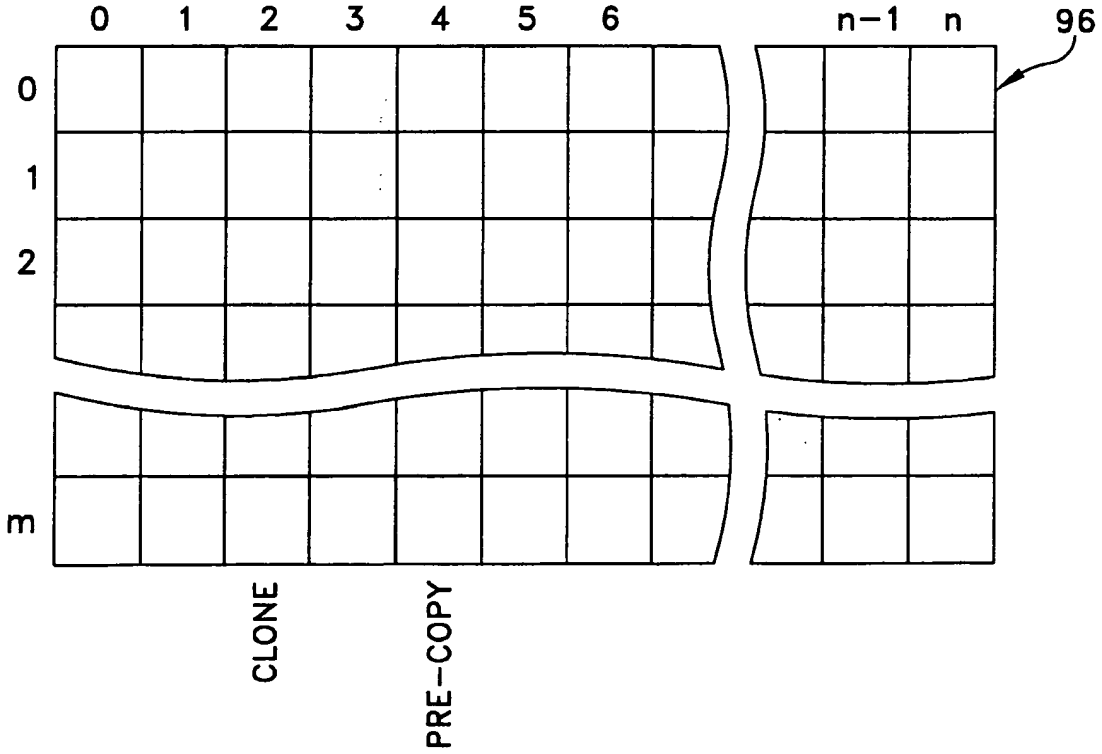
0
1
2
3
4
5
6
n-1
n
96
0
1
2
m
CLONE
PRE-COPY

FIG. 2C

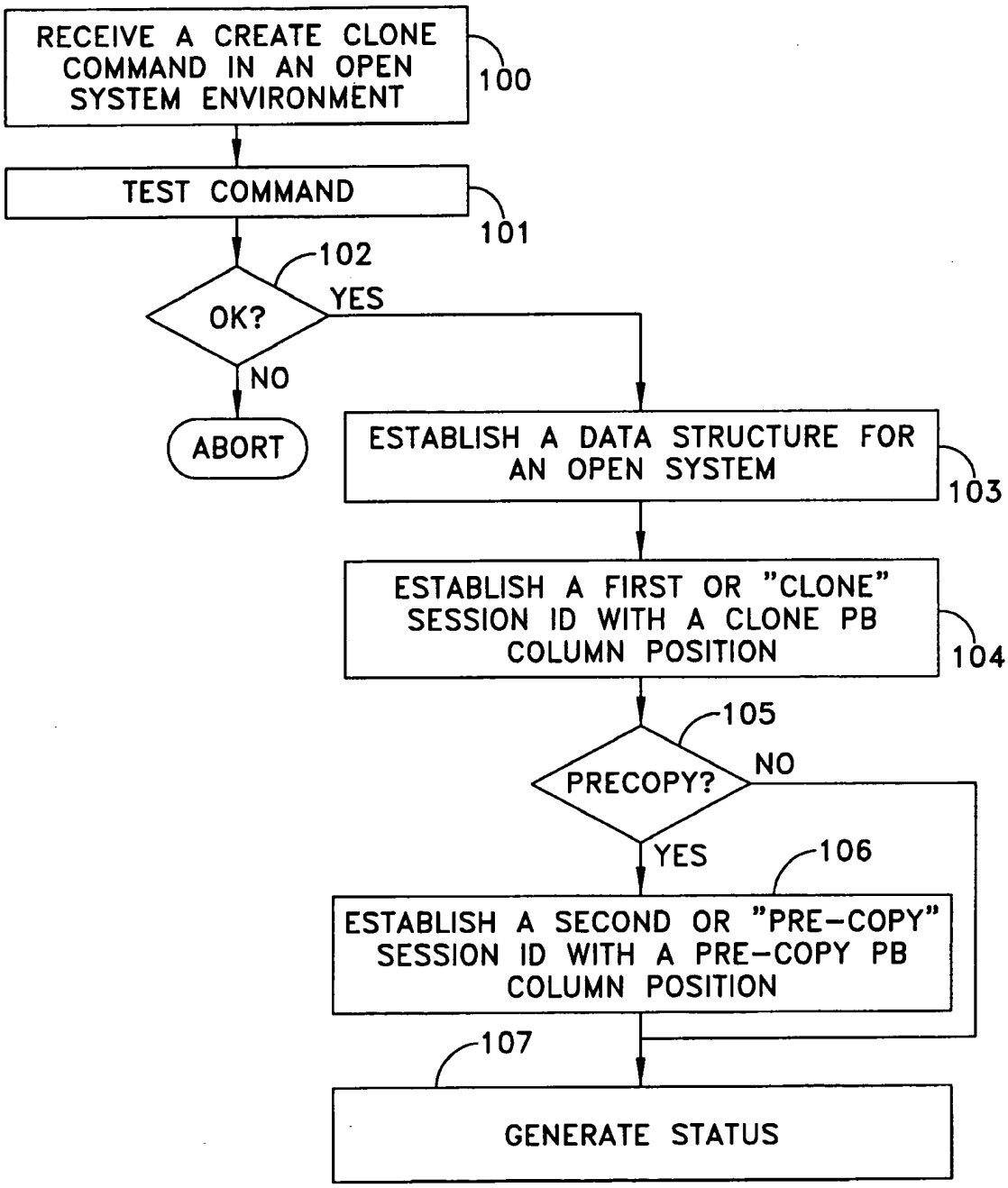
RECEIVE A CREATE CLONE COMMAND IN AN OPEN SYSTEM ENVIRONMENT
100
TEST COMMAND
101
102
OK?
YES
NO
ABORT
ESTABLISH A DATA STRUCTURE FOR AN OPEN SYSTEM
103
ESTABLISH A FIRST OR "CLONE" SESSION ID WITH A CLONE PB COLUMN POSITION
104
105
PRECOPY?
NO
YES
106
ESTABLISH A SECOND OR "PRE-COPY" SESSION ID WITH A PRE-COPY PB COLUMN POSITION
107
GENERATE STATUS

FIG. 3

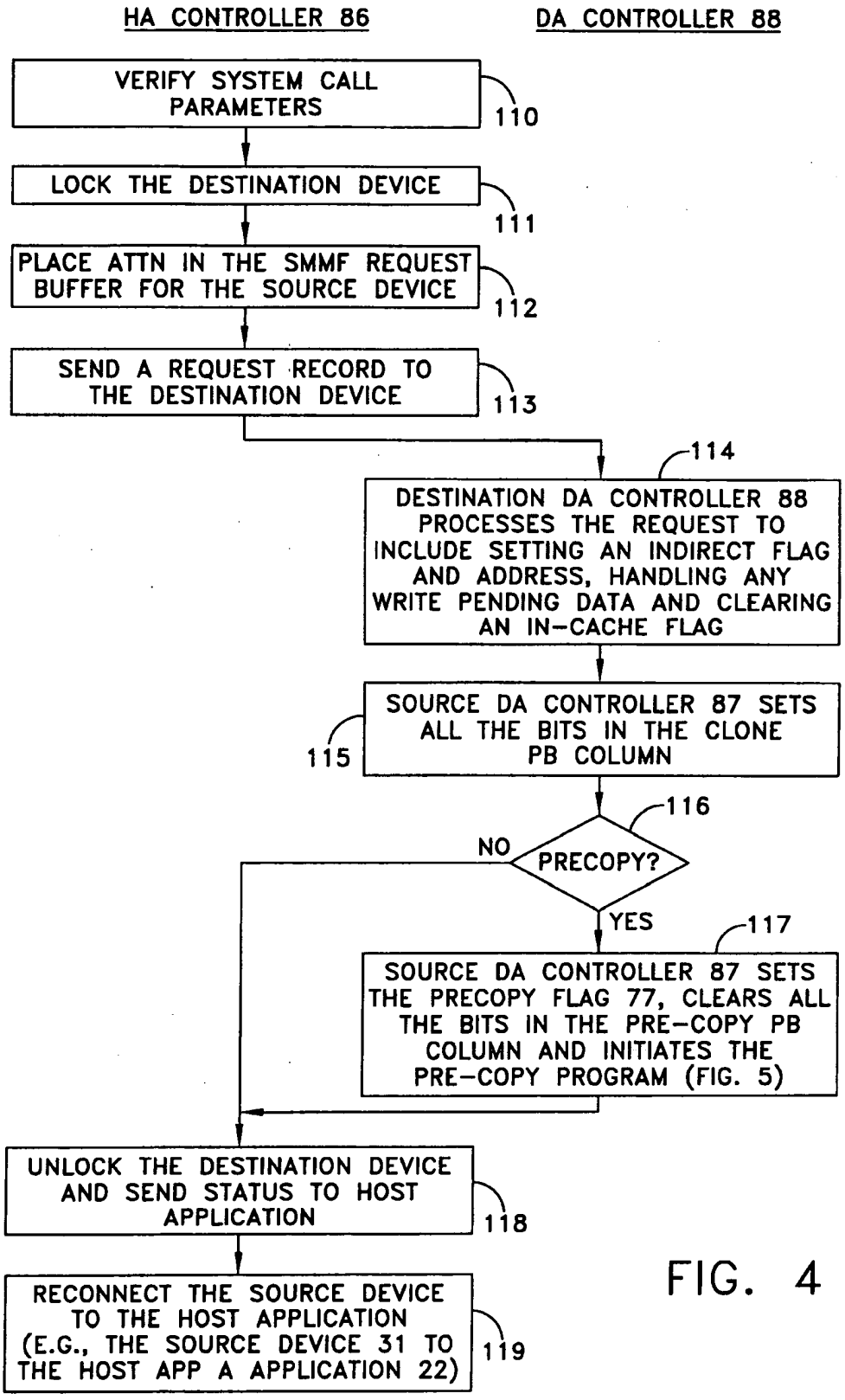
HA CONTROLLER 86
DA CONTROLLER 88
VERIFY SYSTEM CALL PARAMETERS
110
LOCK THE DESTINATION DEVICE
111
PLACE ATTN IN THE SMMF REQUEST BUFFER FOR THE SOURCE DEVICE
112
SEND A REQUEST RECORD TO THE DESTINATION DEVICE
113
114
DESTINATION DA CONTROLLER 88 PROCESSES THE REQUEST TO INCLUDE SETTING AN INDIRECT FLAG AND ADDRESS, HANDLING ANY WRITE PENDING DATA AND CLEARING AN IN-CACHE FLAG
SOURCE DA CONTROLLER 87 SETS ALL THE BITS IN THE CLONE PB COLUMN
115
116
NO
PRECOPY?
YES
117
SOURCE DA CONTROLLER 87 SETS THE PRECOPY FLAG 77, CLEARS ALL THE BITS IN THE PRE-COPY PB COLUMN AND INITIATES THE PRE-COPY PROGRAM (FIG. 5)
UNLOCK THE DESTINATION DEVICE AND SEND STATUS TO HOST APPLICATION
118
RECONNECT THE SOURCE DEVICE TO THE HOST APPLICATION (E.G., THE SOURCE DEVICE 31 TO THE HOST APP A APPLICATION 22)
119

FIG. 4

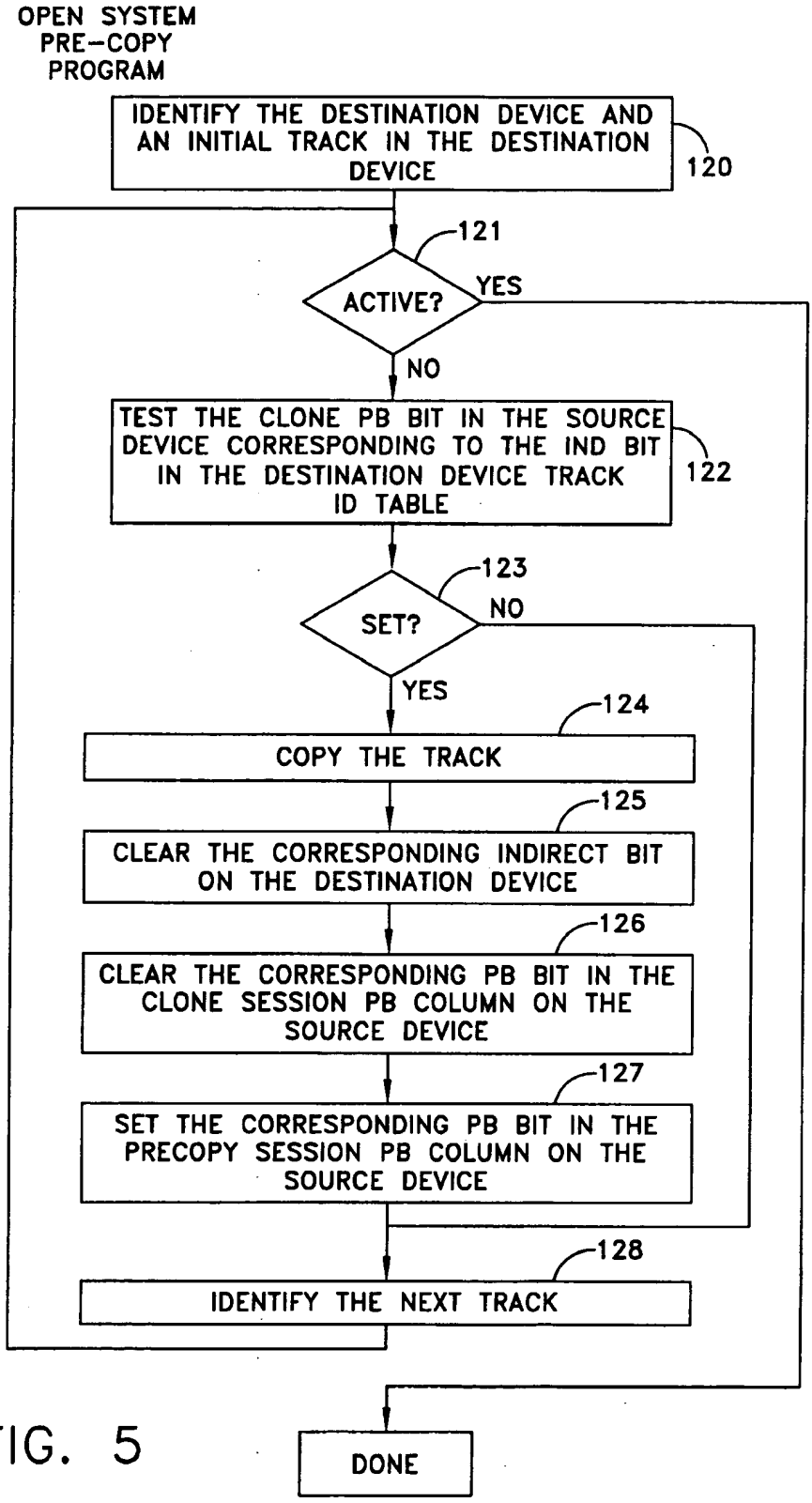
OPEN SYSTEM PRE-COPY PROGRAM
IDENTIFY THE DESTINATION DEVICE AND AN INITIAL TRACK IN THE DESTINATION DEVICE
120
121
ACTIVE?
YES
NO
TEST THE CLONE PB BIT IN THE SOURCE DEVICE CORRESPONDING TO THE IND BIT IN THE DESTINATION DEVICE TRACK ID TABLE
122
123
SET?
NO
YES
124
COPY THE TRACK
125
CLEAR THE CORRESPONDING INDIRECT BIT ON THE DESTINATION DEVICE
126
CLEAR THE CORRESPONDING PB BIT IN THE CLONE SESSION PB COLUMN ON THE SOURCE DEVICE
127
SET THE CORRESPONDING PB BIT IN THE PRECOPY SESSION PB COLUMN ON THE SOURCE DEVICE
128
IDENTIFY THE NEXT TRACK
DONE

FIG. 5

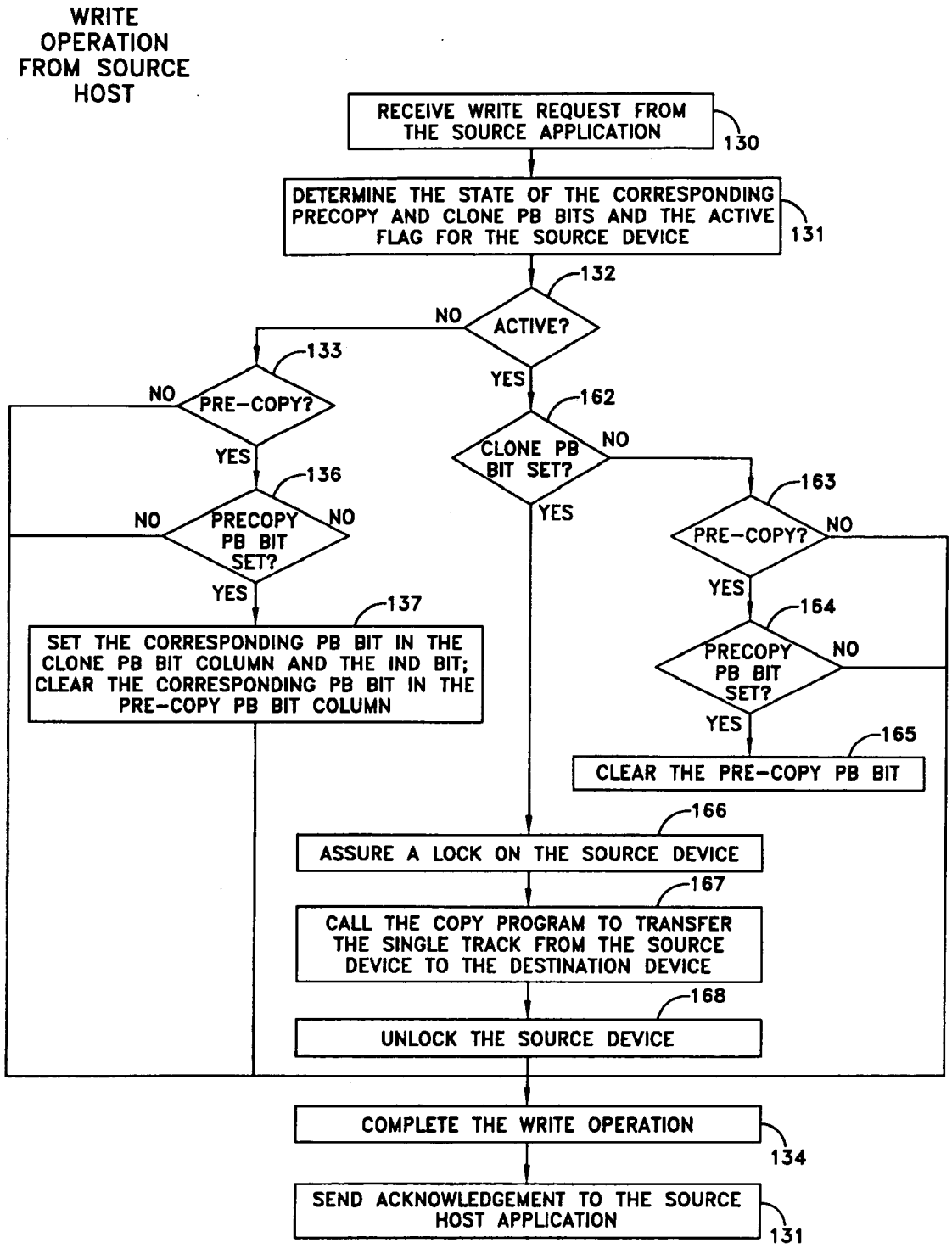
WRITE OPERATION FROM SOURCE HOST
RECEIVE WRITE REQUEST FROM THE SOURCE APPLICATION
130
DETERMINE THE STATE OF THE CORRESPONDING PRECOPY AND CLONE PB BITS AND THE ACTIVE FLAG FOR THE SOURCE DEVICE
131
132
ACTIVE?
NO
YES
133
PRE-COPY?
NO
YES
136
PRECOPY PB BIT SET?
NO
YES
137
SET THE CORRESPONDING PB BIT IN THE CLONE PB BIT COLUMN AND THE IND BIT; CLEAR THE CORRESPONDING PB BIT IN THE PRE-COPY PB BIT COLUMN
162
CLONE PB BIT SET?
NO
YES
163
PRE-COPY?
NO
YES
164
PRECOPY PB BIT SET?
NO
YES
165
CLEAR THE PRE-COPY PB BIT
166
ASSURE A LOCK ON THE SOURCE DEVICE
167
CALL THE COPY PROGRAM TO TRANSFER THE SINGLE TRACK FROM THE SOURCE DEVICE TO THE DESTINATION DEVICE
168
UNLOCK THE SOURCE DEVICE
COMPLETE THE WRITE OPERATION
134
SEND ACKNOWLEDGEMENT TO THE SOURCE HOST APPLICATION
131

FIG. 6

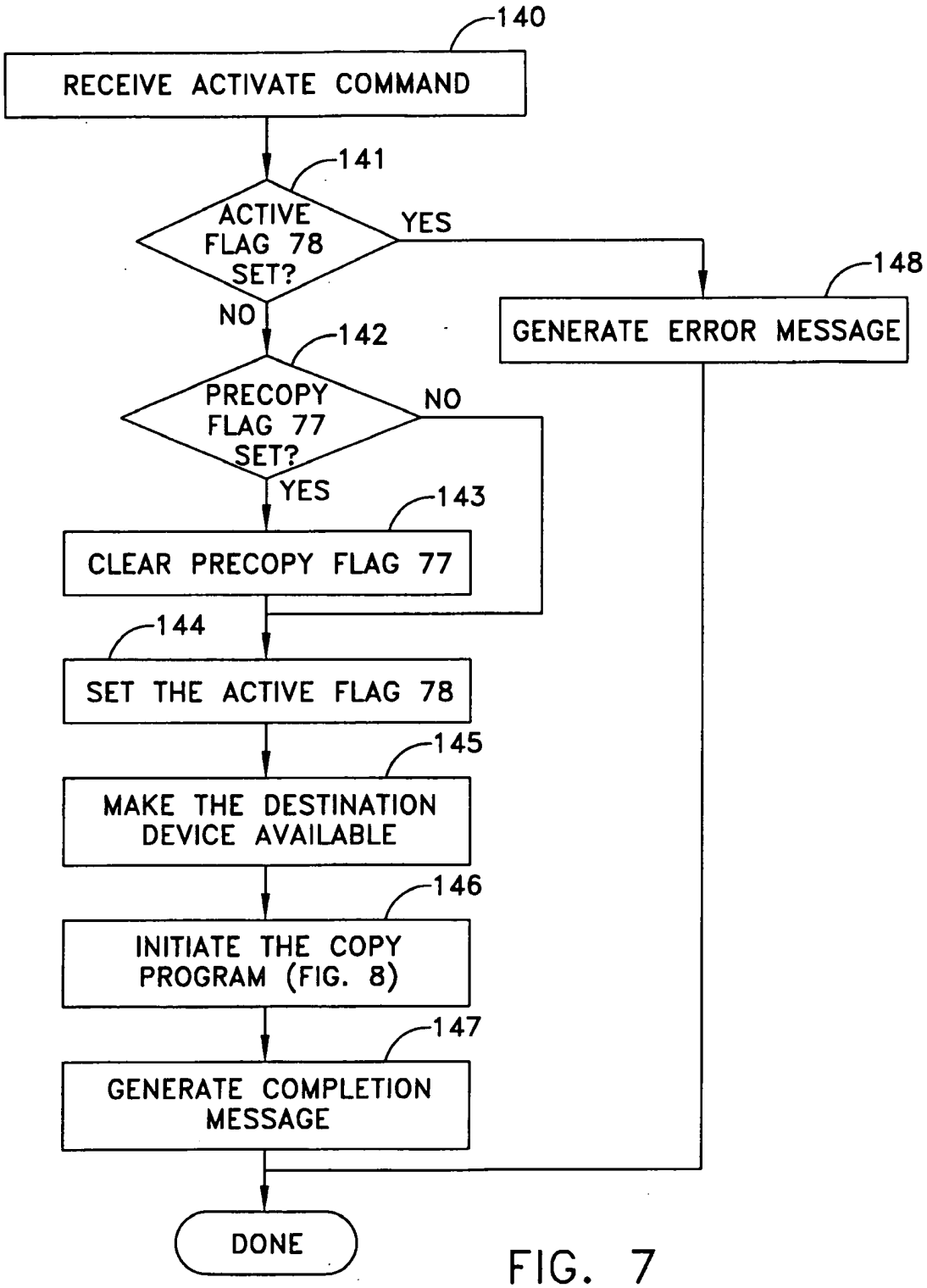
140
RECEIVE ACTIVATE COMMAND
141
ACTIVE FLAG 78 SET?
YES
148
GENERATE ERROR MESSAGE
NO
142
PRECOPY FLAG 77 SET?
NO
YES
143
CLEAR PRECOPY FLAG 77
144
SET THE ACTIVE FLAG 78
145
MAKE THE DESTINATION DEVICE AVAILABLE
146
INITIATE THE COPY PROGRAM (FIG. 8)
147
GENERATE COMPLETION MESSAGE
DONE

FIG. 7

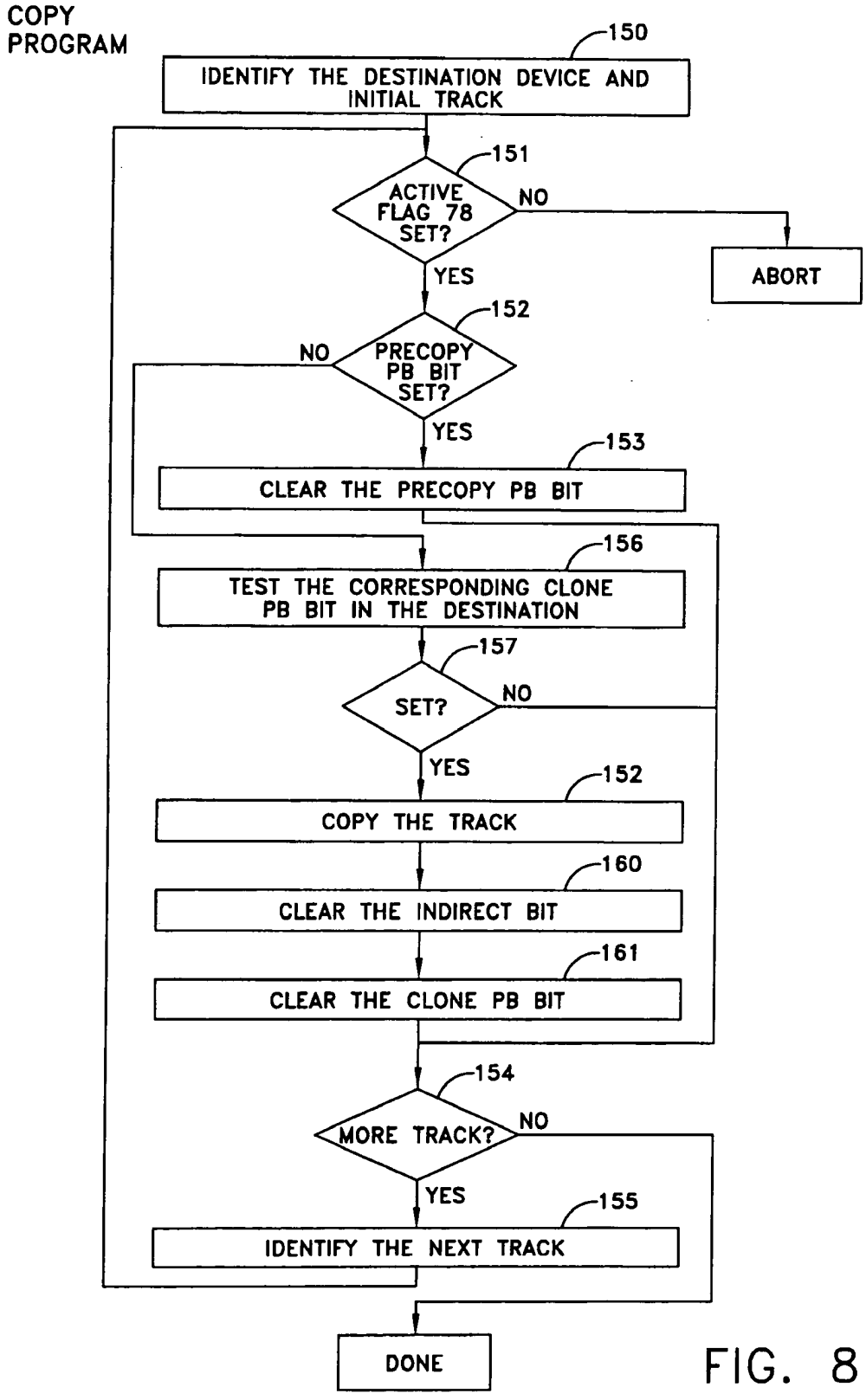
COPY PROGRAM
150
IDENTIFY THE DESTINATION DEVICE AND INITIAL TRACK
151
ACTIVE FLAG 78 SET?
NO
ABORT
YES
152
NO
PRECOPY PB BIT SET?
YES
153
CLEAR THE PRECOPY PB BIT
156
TEST THE CORRESPONDING CLONE PB BIT IN THE DESTINATION
157
SET?
NO
YES
152
COPY THE TRACK
160
CLEAR THE INDIRECT BIT
161
CLEAR THE CLONE PB BIT
154
MORE TRACK?
NO
YES
155
IDENTIFY THE NEXT TRACK
DONE

FIG. 8

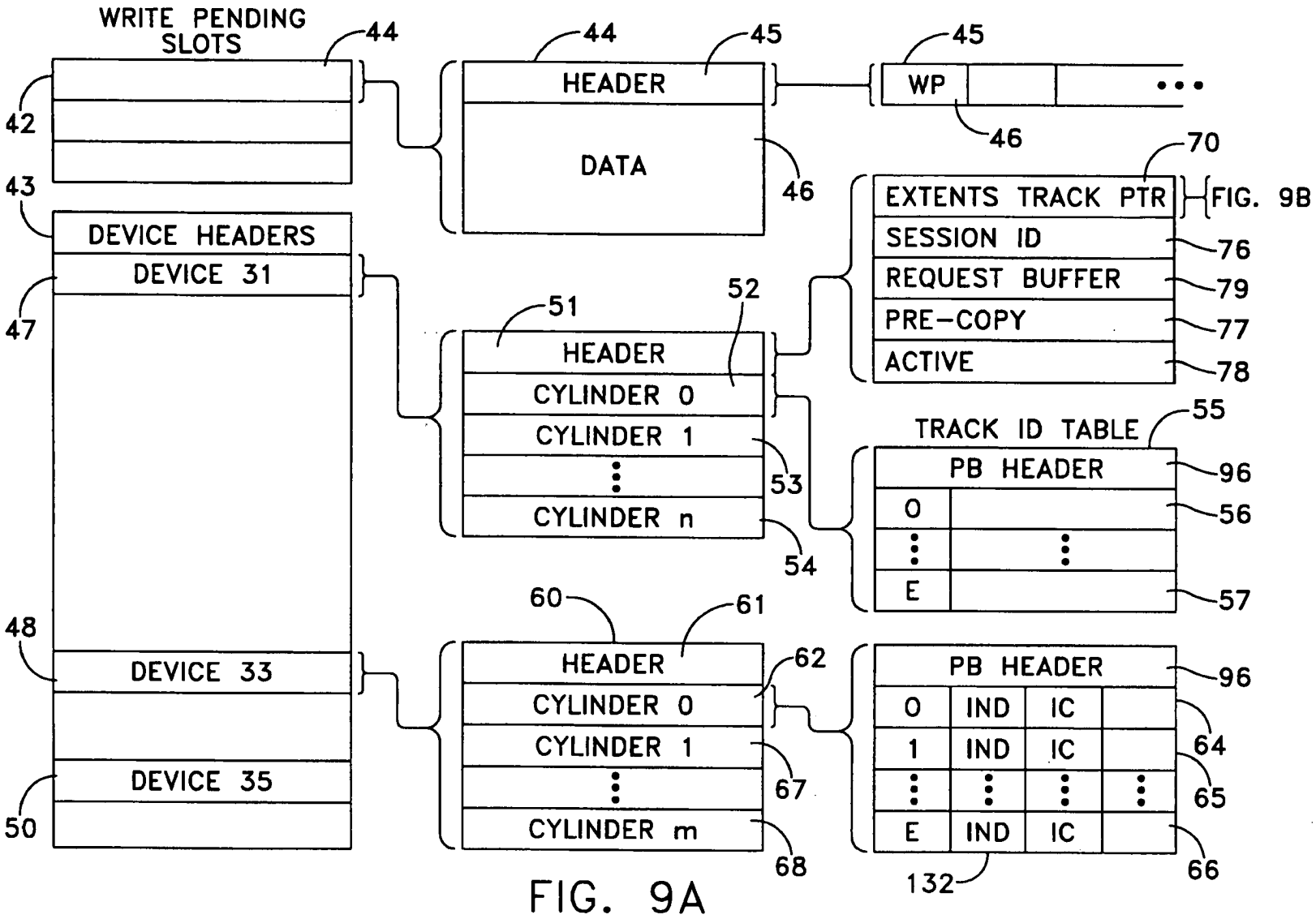
WRITE PENDING SLOTS
44
42
43
DEVICE HEADERS
DEVICE 31
47
48
DEVICE 33
DEVICE 35
50
44
45
HEADER
DATA
46
45
WP
46
70
EXTENTS TRACK PTR
FIG. 9B
SESSION ID
76
REQUEST BUFFER
79
PRE-COPY
77
ACTIVE
78
51
52
HEADER
CYLINDER 0
CYLINDER 1
CYLINDER n
53
54
55
TRACK ID TABLE
PB HEADER
96
0
56
E
57
60
61
HEADER
62
CYLINDER 0
CYLINDER 1
67
CYLINDER m
68
PB HEADER
96
0
IND
IC
64
1
IND
IC
65
E
IND
IC
66
132

FIG. 9A

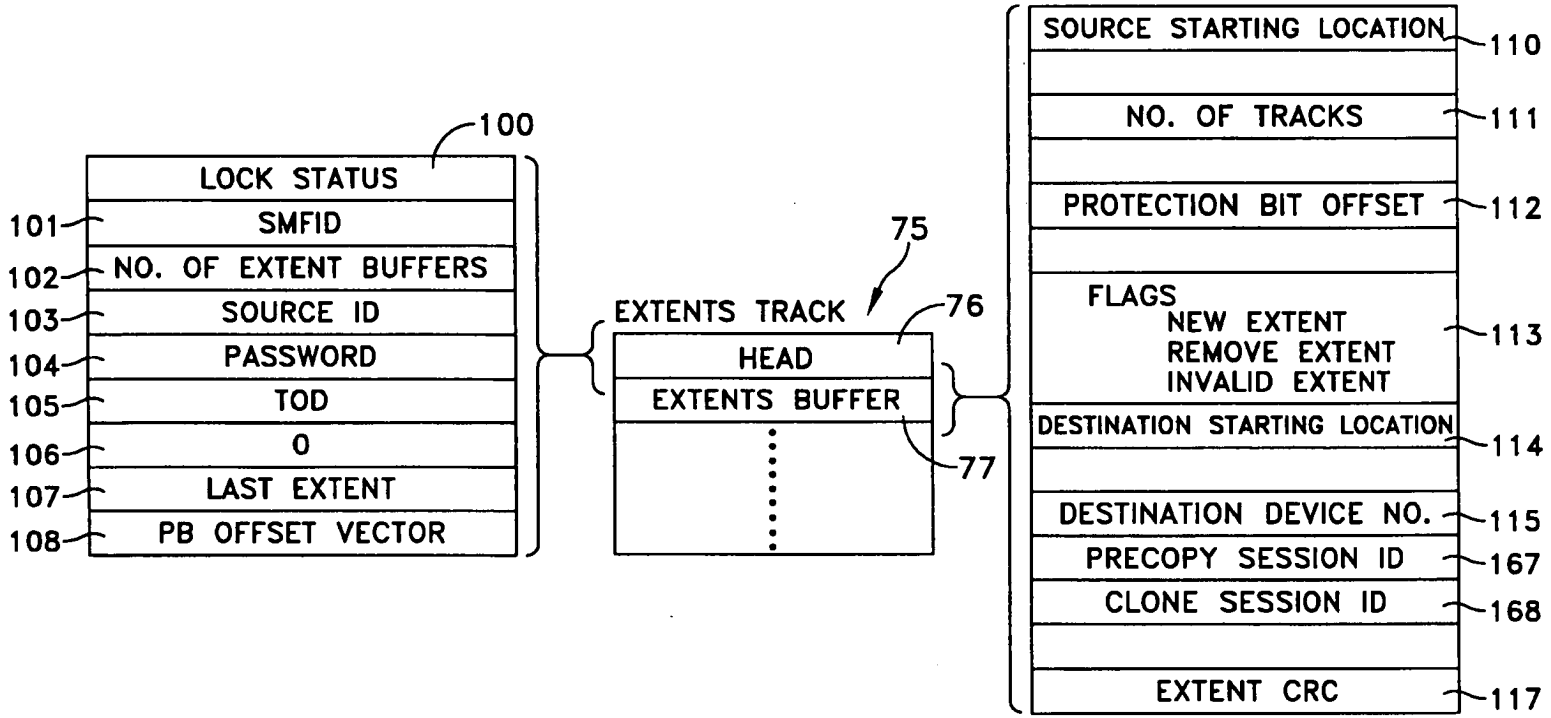
100
LOCK STATUS
101
SMFID
102
NO. OF EXTENT BUFFERS
103
SOURCE ID
104
PASSWORD
105
TOD
106
0
107
LAST EXTENT
108
PB OFFSET VECTOR
75
EXTENTS TRACK
76
HEAD
EXTENTS BUFFER
77
SOURCE STARTING LOCATION
110
NO. OF TRACKS
111
PROTECTION BIT OFFSET
112
FLAGS
NEW EXTENT
REMOVE EXTENT
INVALID EXTENT
113
DESTINATION STARTING LOCATION
114
DESTINATION DEVICE NO.
115
PRECOPY SESSION ID
167
CLONE SESSION ID
168
EXTENT CRC
117

FIG. 9B

MAINFRAME
SYSTEM
PRE-COPY
PROGRAM

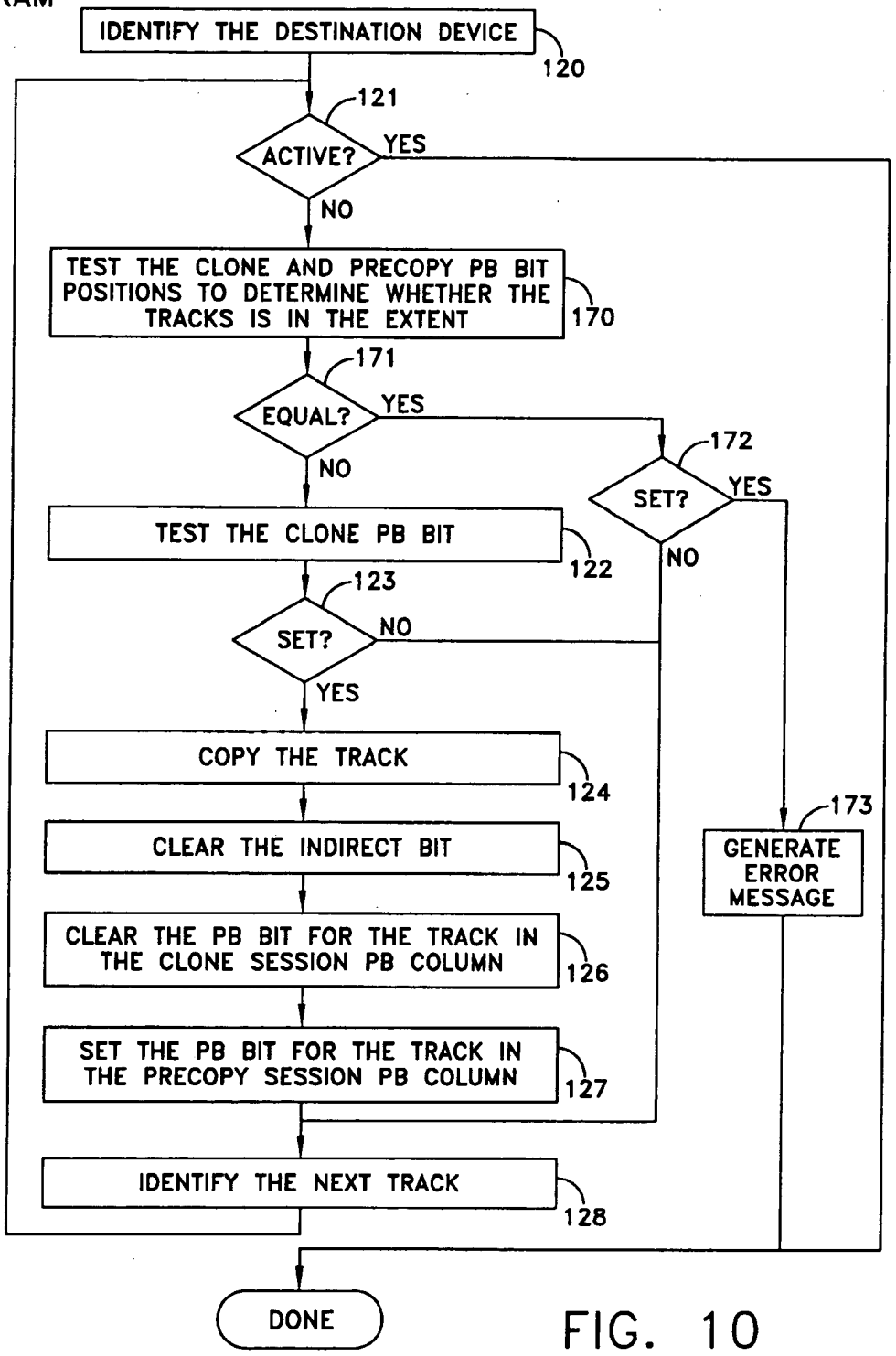

FIG. 10